

CLAIMS

We claim:

- 1 1. A variable length antenna for transmitting or
 2 receiving signals at a plurality of frequencies comprising:
 3 a plurality of ^{110, 110a, ...} antenna segments;
 4 a plurality of ^{120a, b, ...} selectively actuatable switches for
 5 interconnecting said antenna segments; and
 6 a ¹³⁰ switching mechanism operably coupled to said
 7 plurality of selectively actuatable switches for actuating said
 8 plurality of switches [at a switching rate that is greater than
 9 two times the highest of said plurality of frequencies.]
 1 2. A variable length antenna according to claim 1 wherein
 2 said switching mechanism comprises:
 3 a ¹²¹ switch controller; and
 4 at least one light source operably coupled to said
 5 switch controller.
 1 3. A variable length antenna according to claim 2 wherein
 2 said switch controller switches said at least one light source
 3 from a non-emissive to an emissive state or from an emissive to
 4 a non-emissive state.
 1 4. A variable length antenna according to claim 3 wherein
 2 said at least one light source sequentially actuate said
 3 actuatable switches at said switching rate.

1 5. A variable length antenna according to claim 1 wherein
 2 said switching mechanism comprises:
 3 a switching device;
 4 at least one light source operably coupled to said
 5 switching device; and
 6 a delay mechanism operably coupled to said at least
 7 one light source for effecting delay in actuating said plurality
 8 of selectively actuatable switches.

1 6. A variable length antenna according to claim 5 wherein
 2 said switching device simultaneously switches said at least one
 3 light source from a non-emissive to an emissive state or from an
 4 emissive to a non-emissive state.

1 7. A variable length antenna according to claim 6 wherein
 2 said delay mechanism comprises a ²⁵⁰plurality of optical fibers and
 3 wherein each of said plurality of optical fibers has a different
 4 physical length with respect to the other optical fibers.

1 8. A variable length antenna according to claim 6 wherein
 2 said delay mechanism comprises a ²⁵⁰plurality of optical fibers and
 3 a ²⁶⁰plurality of optical retarders operably coupled to said
 4 plurality of optical fibers for changing the effective length.

1 (9.) A variable length antenna according to claim 1
 2 wherein said switching mechanism comprises:
 3 a switching device;

4 a single light source operably coupled to said
5 switching device;

Fig. 46
6 at least one diffraction grating operably coupled to
7 said light source; and

8 a delay mechanism operably coupled to said at least
9 one diffraction grating for effecting delay in actuating said
10 plurality of selectively actuatable switches.

1 10. A variable length antenna according to claim 9 wherein
2 said switching device switches said single light source from a
3 non-emissive to an emissive state or from an emissive to a non-
4 emissive state.

1 11. A variable length antenna according to claim 10
2 wherein said single light source is a multi-wavelength light
3 source.

1 12. A variable length antenna according to claim 10
2 wherein said at least one diffraction grating diffract light
3 from said light source to produce a plurality of light sources.

1 13. A variable length antenna according to claim 10
2 wherein said delay mechanism comprises a plurality of optical
3 fibers and wherein each of said plurality of optical fibers has
4 a different physical length with respect to the other optical
5 fibers.

1 14. A variable length antenna according to claim 10
2 wherein said delay mechanism comprises a plurality of optical

3 fibers and a plurality of optical retarders operably coupled to
4 said plurality of optical fibers for changing the effective
5 length.

1 15. A variable length antenna according to claim 1 wherein
2 each of said plurality of antenna segments comprises a
3 dielectric container for holding a conductive fluid and wherein
4 said variable length antenna further comprises:

5 a conductive fluid;

6 a reservoir operably coupled to said plurality of
7 dielectric containers for holding said conductive fluid; and

8 a pressure regulator system operably coupled to said
9 plurality of dielectric containers for controlling the pressure
10 in said plurality of dielectric containers.

11 16. A variable length antenna according to claim 15
12 wherein said pressure regulator system comprises devices
13 operably coupled to said plurality of dielectric containers for
14 controlling the pressure in said plurality of dielectric
15 containers.

1 (17.) A variable length antenna for transmitting or
2 receiving signals at a plurality of frequencies comprising:

3 a plurality of antenna segments; and

4 a source of at least one electromagnetic beam for
5 decoupling said antenna segments.

